#10 6-26-04

Due Date: June 21, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

Inventor: Kenneth W. O'Flaherty

Serial #: 09/608,595

Filed: June 30, 2000

Title: INCORPORATING PREDICTIVE MODELS WITHIN INTERACTIVE BUSINESS ANALYSIS PROCESSES

Examiner: Eric T. Shaffer

Group Art Unit: 3623

Appeal No.: _____

REPLY BRIEF OF APPELLANT

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In accordance with 37 CFR §1.193, Appellant's attorney hereby submits the Reply Brief of Appellant, in triplicate, in response to the Examiner's Answer dated April 21, 2004 in the above-identified application.

This Reply Brief of Appellant incorporates by reference herein the entirety of the previously filed Brief of Appellant. Moreover, new arguments are also presented herein, since there are additional grounds of argument found in the Examiner's Answer.

No fee is required for filing this Reply Brief. However, the Office is authorized to charge any necessary fees or credit any overpayments to Deposit Account No. 50-1673 of NCR Corporation, the assignee of the present invention.

I. ARGUMENTS

A. The Examiner's Answer Introduces New Grounds Of Rejection

Appellant's attorney submits that new grounds of rejection were introduced in this appeal by the Examiner's Answer, when it cites new portions of Amado, U.S. Patent 5,701,400 for the

first time in rejecting the claims of the above-identified patent application. Specifically, although the statutory basis for the rejections remains the same, i.e., the Amado reference, the evidence relied upon in support of the rejection is different, in that different portions of the Amado reference are cited and applied, and consequently, this change in the discussion or rationale of the rejection constitutes new grounds of rejection. Appellant's attorney notes that 37 C.F.R. §1.193(a)(2) prohibits the entry of new grounds of rejection in an Examiner's Answer.

B. The Claims Are Patentable Over The New Grounds Of Rejection

In the Answer, the Examiner first reiterates the rejections from the final Office Action. Thereafter, the Examiner sets forth a number of new grounds of rejections in response to the Brief of Appellant. As noted above, this Reply Brief of Appellant incorporates by reference herein the entirety of the previously filed Brief of Appellant. Consequently, only the new grounds of rejection are addressed by the new arguments presented herein.

1. The Appellant's Independent Claims Are Patentable Over The Reference

Appellant's independent claims 1, 15 and 29 are patentable over the reference because they recite a novel and nonobvious combination of steps and elements.

For example, the Examiner originally stated that Amado teaches the element of "applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built by a model-building mechanism in a data mining system," at column 17, lines 18-20. Now, the Examiner asserts that these elements are shown at col. 36, lines 26-28 and FIG. 16 (segment), col. 88, lines 64-65 (derived measure), col. 17, lines 22-26 (predictive model data mining), col. 25, lines 43-47 (predictive model), col. 100, lines 63-67 (predictive model), col. 98, lines 58-59 (predictive model). These descriptions in Amado are reproduced below:

> Amado: Col. 36, lines 26-28 (actually, lines 25-31)
> FIG. 3 shows the data database's (5) basic components: one or more database tables containing lines or records (11) containing individual data items (12) of the data to be analyzed (13), group descriptions data tables (14), group elements data tables (15) listing the individual data items (12), and/or lines or records (11) of the data that comprise each group, and related index files (15).

Amado: FIG. 16

DATA TABLE

Data	Name	C1-Aug 93	C2-Sep'93	C3-Oct'
1.BALANCE.00	BALANCE SHEET ($)			
1.BALANCE.01	ASSETS ($)			
1.BALANCE.02	Current Assets ($)	803.28	906.60	
1.BALANCE.03	Long-Term Investments ($)	50.00	50.00	
1.BALANCE.04	Property, Plant&Equip.(Net $	599.40	586.50	
1.BALANCE.05	Other Assets ($)	33.00	35.00	
1.BALANCE.06	TOTAL ASSETS ($)	1,486.68	1,578.10	
1.BALANCE.07	LIABILITIES ($)			
1.BALANCE.08	Current Liabilities ($)	99.74	101.53	
1.BALANCE.09	Long-Term Liabilities ($)	198.95	176.41	
1.BALANCE.10	TOTAL LIABILITIES ($)	298.69	277.94	

DIAGNOSTICS

Data	PER	Test	Name
1:BALANCE.08	Sep 93 5	DEBT-	The debt ratio is too low (lower than 0.25)
1:BALANCE.08	Sep 93 5	LIABI-	Liabilities have gone up two consecutive per

FIGURE 16

Amado: Col. 88, lines 64-65 (actually, col. 88, line 64 – col. 89, line 3)

Step 9. Count the number of records in PRRESULT containing field PER equal or larger than PerIni (initial period) and smaller or equal than PerFin (initial period) and then store this number (the count) in variable CountDiag.

Amado: Col. 17, lines 22-26 (actually lines 16-39)

The DataLogic/R.TM. knowledge extraction tool by REDUCT Systems Inc. of Regina, SK, Canada, is a tool to reason from data, a professional tool for knowledge acquisition, classification, predictive modeling, expert systems building, and database "mining". This product is a decision support and database mining software that provides data analysis and knowledge discovery based on the methodology of rough sets. It analyzes logical patterns in data, including theories of knowledge representation, inductive logic and rough sets. It provides forecasting and decision making from imprecise, incomplete and ambiguous data. It discovers simple knowledge rules from data and provides full auditability of rules and decisions. With the Missing Data Module, the program can also process incomplete databases without filling in missing values. It generates rules at different levels of knowledge representation and rule precision. It provides several reports. The Rule Report describes significant logical patterns/rules in the database. The Rule Support Report describes pattern strength, and data which support the patterns. The Validation Report describes accuracy of the uncovered patterns and rules. The Expert Report describes recommended decisions for new cases, and the Decision Report describes how decisions were made.

Amado: Col. 25, lines 43-47 (actually lines 43-53)

The ability to identify and even execute specific actions as soon as particular diagnostics are generated or activated.--Each diagnostic may have an associated set of actions. Suggested actions are generated the very same instant the diagnostics are generated. Suggested actions are presented to the user

whenever he queries the resulting diagnostics. An additional example of executable actions is the memorandums option in the preferred embodiment. Whenever particular diagnostics are generated, their associated memorandums may be automatically printed or even sent by E-Mail to the people responsible, those who must take action.

Amado: Col. 100, lines 63-67 (actually col. 100, line 61–col. 101, line 14)

In such an implementation, the expert system's inference engine would read its data from the diagnostics DBF file result.dbf, and optionally also from the data DBF file tabla.dbf. It would run its sets of rules on this data, and it would finally generate a set of expert solutions. These solutions would be written as new diagnostics in the diagnostics DBF file result.dbf, using the best embodiment's scheme: a reference (or a list of reference) to the data items involved, and an identifier for the ensuing diagnostic. For compatibility with the invention's current structure, a test DBF file entry would also be generated whenever the corresponding test is missing. The test entry will contain the test's short and long description, and the associated classes, triggers and actions, as described. Thus, the user will be able to also reach the diagnostics generated by the expert system by using the querying engine and the corresponding coordinated diagnostic browse views in the same way described previously. The expert system's diagnostics could be distinguished from all others by using appropriate values for the ACTION1, ACTION2, ACTION3, ACTION4 and CLASS5 fields in file test.dbf.

Amado: Col. 98, lines 58-59 (actually lines 44-64)

Expert system building tools such as the VP-EXPERT.TM. expert shell by Paperback Software allow the definition of rules and sets of rules entirely in a database DBF file. These are called induction tables, and are fully documented in available literature. Integrating procedural language techniques into the expert diagnostics is equivalent to developing of an expert system's knowledge base in the invention. In order to convert the invention into a full-fledged expert system, only the inference engine procedures need to be considered. As it was stated previously, the inference engine or role interpreter has two tasks. First, it examines facts in working memory (the diagnostics that have been mined on) and rules in the rule base (the expert diagnostics), and adds new facts (diagnostics) to the database when possible. Second, it determines in what order rules (expert diagnostics) are scanned and fired. But, the goal in this expert system building tool is to build as many expert diagnostics as possible and, for that goal, the procedure already described, however crude, is an example of a simple but complete forward chaining algorithm; it's not the most efficient, but it serves its task.

At the above locations, Amado merely describes data items, records, predictive modeling and data mining generally, but nothing in this description refers to "applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built

by a model-building mechanism in a data mining system." Indeed, nothing in the description discusses "derived measures," "measures," or "segments," as defined in Appellant's specification. For example, in Appellant's specification, a "segment" is a grouping of data elements organized about one or more attributes, a "measure" is a formula applied against a segment, and a "derived measure" is a predictive model, created by an analytic algorithm for rule induction, rather than defined by a user. None of these elements are taught in the reference.

In another example, the Examiner originally stated that Amado teaches the element of "generating output for the segment from the predictive model in the form of measure values," at column 61, lines 34-40 and column 43, line 66 – column 44, line 1 (relative to the output format). This description in Amado is reproduced below:

> Amado: Col. 61, lines 34-40 (actually lines 32-40)
> Users may also define their own functions. Any function may call an external program and read the values returned from that program. In one such example, a definable function may call and run one or more neural networks on a particular set of data in the data database and return the output values of that run as weighting factors and TRUE or FALSE responses thus controlling whether specific diagnostics should or should not be written in the diagnostics database.

> Amado: Col. 43, line 66 – col. 44, line 1 (actually col. 44, line 3)
> As shown in FIG. 63, users may print or Email any information extracted from a screen, a window or a combination of windows from the previously discussed views: data, diagnostics, expert diagnostics, action categories and actions.

In the above description, Amado merely describes user-definable functions. However, nothing in this description refers to output from "predictive models" for a "segment" in the form of "measure" values. As noted above, none of these elements are taught in the reference.

Consequently, the Amado reference does not teach or suggest all the limitations of Appellant's independent claims.

Thus, Appellant submits that independent claims 1, 15, and 29 are allowable over Amado.

2. The Appellant's Dependent Claims Are Patentable Over The References

Appellant's attorney submits that dependent claims 2-14, 16-28, and 30-42 are allowable over Amado in the same manner as the independent claims, because they are dependent on

independent claims 1, 15, and 29, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-14, 16-28, and 30-42 recite additional novel elements not shown by Amado .

With regard to claim 2, 16 and 30, which recite "the derived measure is invoked within an application template, the application template comprises a sequence of elements linked together in a workflow, and the elements are selected from a group comprising a segment, a filter, a measure and a function," the Examiner originally stated that Amado teaches this limitation at col. 16, line 29, FIGS. 68, 72, 88-91, 93, 94 and 96-99, col. 37, lines 12-27, col. 67, lines 15-18, col. 9, lines 27-32 and col. 61, lines 34-36. Now, the Examiner also includes col. 88, lines 64-65 (data elements as a measure), col. 32, lines 5-9 (data set selected from a function), FIG. 32 (applications), FIG. 16 (application templates), FIG. 15 (filter), FIG. 61 (call), col. 48, lines 64-65 (application templates), FIG. 114 (workflow diagram), col. 37, lines 4-5 (filters), and FIG. 9 (workflow diagrams). Appellant's attorney disagrees. The cited portions of Amado merely describe Case-based Reasoning (CBR) application templates, various data structures, operative flow diagrams, a filter dialog box, a predictive modeling system, and a definable function for calling and running neural networks. However, these portions do not teach or suggest derived measures, applications templates, or linked workflow elements comprising segments, filters, measures and functions, as recited in the context of Appellant's invention.

With regard to claim 3, 17 and 31, which recite "the application template is constructed in a visual programming environment," the Examiner originally stated that Amado teaches this limitation at col. 16, line 29 and col. 25, line 66 – col. 26, line 1. Now, the Examiner also includes col. 26, lines 21-24. Appellant's attorney disagrees. The cited portions of Amado merely describe CBR application templates, building intelligent applications by visually linking the data to develop key diagnostics, and graphical user interfaces for developing applications. However, these portions do not teach or suggest application templates as recited in the context of Appellant's invention.

With regard to claim 4, 18 and 32, which recite "the application templates can be reused and/or modified by users," the Examiner originally stated that Amado teaches this limitation at col. 16, line 29 and col. 25, line 66 – col. 26, line 1. Now, the Examiner also includes col. 10, lines 25-31. Appellant's attorney disagrees. The cited portions of Amado merely describe CBR application templates, building intelligent applications by visually linking the data to develop

key diagnostics, and reusable applications. However, these portions do not teach or suggest application templates as recited in the context of Appellant's invention.

With regard to claim 5, 19 and 33, which recite "a segment is a grouping of data elements from a database organized about one or more attributes," the Examiner originally stated that Amado teaches this limitation at col. 90, lines 32-34. Now the Examiner cites col. 36, lines 26-28 (individual data items to be analyzed) and FIG. 16. Appellant's attorney disagrees. The cited portions of Amado merely describe tables having records containing individual data items. However, these portions do not teach or suggest segments or the grouping of data elements into segments, as recited in the context of Appellant's invention.

With regard to claim 6, 20 and 34, which recite "a filter defines one or more attribute constraints applied to a segment," the Examiner originally stated that Amado teaches this limitation at col. 67, lines 15-18, col. 41, lines 63-64 and col. 43, lines 59-63. Now, the Examiner also includes col. 66, lines 6-7. Appellant's attorney disagrees. The cited portions of Amado merely describe a filter dialog box. However, these portions do not teach or suggest a filter as applied to a segment, as recited in the context of Appellant's invention.

With regard to claim 7, 21 and 35, which recite "a profile is a labeled collection of attributes of a segment," the Examiner originally stated that Amado teaches this limitation in FIG. 74 and col. 45, lines 14-18. Now, the Examiner cites col. 31, lines 8-10 (segments) and col. 36, lines 26-28 (profile). Appellant's attorney disagrees. The cited portions of Amado merely describe a group elements data table and tables having records containing individual data items. However, these portions do not teach or suggest a profile, a segment or a labeled collection of attributes in a segment.

With regard to claim 8, 22 and 36, which recite "a measure is an expression applied to a segment," the Examiner originally stated that Amado teaches this limitation at col. 45, lines 18-22. Now, the Examiner also includes col. 48, lines 64-65. Appellant's attorney disagrees. The cited portions of Amado merely describe a data structure for storing a group, formula and order of evaluation, and fuzzy values generated through conversion tables. However, these portions do not teach or suggest a measure or a segment, as recited in the context of Appellant's invention.

With regard to claim 9, 23 and 37, which recite "the computer-implemented business analysis environment includes an object model, and the segments, attributes, filters, and measures comprise objects," the Examiner originally stated that Amado teaches this limitation at

col. 12, lines 19-23. Now, the Examiner also includes col. 95, lines 48-49, col. 39, lines 24-25, and col. 48, lines 64-67. Appellant's attorney disagrees. The cited portions of Amado merely describe object-oriented database development tools generally, filter buttons, filter dialog boxes and fuzzy values generated from conversion tables. However, these portions do not teach or suggest an object model including segments, attributes, filters, and measures as objects.

With regard to claim 10, 24 and 38, which recite "operations upon the objects are translated into SQL statements that access corresponding tables and columns in a relational database," the Examiner originally stated that Amado teaches this limitation at col. 66, lines 2-7, in FIG. 3 and at col. 31, lines 6-10. Now, the Examiner also includes col. 12, lines 1-9 and col. 12, line 17, and col. 11, lines 48-57. Appellant's attorney disagrees. The cited portions of Amado merely describe automatic query systems, a database structure, database tools, including knowledge extraction tools, object-oriented databases, and the use of SQL in object-oriented databases. However, these portions do not teach or suggest the translation of object operations into SQL.

With regard to claim 11, 25 and 39, which recite "the predictive model comprises one or more SQL statements that access tables and columns in a relational database," the Examiner originally stated that Amado teaches this limitation at col. 66, lines 2-7, in FIG. 3 and at col. 31, lines 6-10. Now, the Examiner also includes col. 17, lines 46-47, col. 15, lines 21-24, col. 66, line 7, and col. 11, lines 53-57. Appellant's attorney disagrees. The cited portions of Amado merely describe automatic query systems, a database structure, uncovering logical patterns in data, predicting outcomes from the patterns, data mining and the use of SQL. However, these portions do not teach or suggest a predictive model that comprises SQL statements.

With regard to claim 14, 28 and 42, which recite "the model-building mechanism comprises an analytic algorithm for rule induction performed against data stored in a database management system to create the predictive model," the Examiner originally stated that Amado teaches this limitation at col. 17, lines 18-20, col. 15, lines 17-18 and col. 15, lines 39-44. Now, the Examiner also includes col. 8, lines 4-6. Appellant's attorney disagrees. The cited portions of Amado merely describe predictive modeling and database mining generally, rough sets for data analysis and knowledge discovery, classification rules for classifying objects, and neural nets that generate rules from existing data. However, these portions do not teach or suggest a

model-building mechanism comprising an analytic algorithm for rule induction that is used to create a predictive model.

II. CONCLUSION

In light of the above arguments, Appellant's attorney respectfully submits that the cited references do not anticipate nor render obvious the claimed invention. More specifically, Appellant's claims recite novel functions and features which patentably distinguish over any and all references under 35 U.S.C. §§ 102 and 103. As a result, a decision by the Board of Patent Appeals and Interferences reversing the Examiner and directing allowance of the pending claims in the subject application is respectfully solicited.

Respectfully submitted,

Appellant's attorneys,

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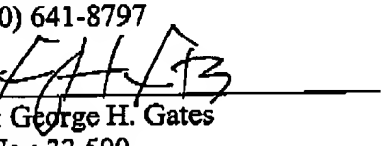
Date: June 21, 2004

By: 
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